

LISTING OF CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1 (Currently amended): A method for fabricating ZnO nanostructures from Zn gas, ~~which is produced by a reduction process between~~, comprising:
preparing a mixture of ZnO powder and graphite;
exposing said mixture of ZnO powder and graphite to, on a silicon substrate,
~~wherein said reduction process is performed at 800–950 °C in the presence of a gas~~
mixture comprising oxygen gas and argon gas, where the oxygen gas is present at a concentration of 1-20 vol% relative to the argon gas volume;
providing a silicon substrate on which to grow ZnO nanostructures; and
heating said mixture of ZnO powder and graphite to a temperature of 800 - 950 °C in the presence of said gas mixture.

Claim 2 (Previously presented): The method for fabricating ZnO nanostructures according to claim 1, wherein said argon gas is introduced into a reaction tube at the rate of 20-50 cc/min.

Claim 3 (Previously presented): The method for fabricating ZnO nanostructures according to claim 1, wherein said silicon substrate is coated with gold to provide a gold layer that is 10-30 angstrom (Å) thick.

Claim 4 (Previously presented): The method for fabricating ZnO nanostructures according to claim 1, wherein nanowires are fabricated in the condition where a reaction temperature is 800 - 850 °C, and argon gas is introduced into a reaction tube at the rate of 20-50 cc/min.

Claim 5 (Previously presented): The method for fabricating ZnO nanostructures according to claim 4, wherein said nanowires are 50-200 nm in diameter and 5-100 µm in length.

Claim 6 (Previously presented): The method for fabricating ZnO nanostructures according to claim 1, wherein nanowire arrays are fabricated in the condition where a reaction temperature is 850 - 900 °C, argon gas is introduced into a reaction tube at the rate of 20-50 cc/nm, the oxygen gas is present at a concentration of 1-2 vol% relative to the argon gas volume.

Claim 7 (Previously presented): The method for fabricating ZnO nanostructures according to claim 6, wherein said nanowire arrays are of a comb shape and 10-50 µm in width, 50-1000 µm in length and 50-300 nm in diameter.

Claim 8 (Previously presented): The method for fabricating ZnO nanostructures according to claim 1, wherein nanosheets are fabricated in the condition where a reaction temperature is 850 - 900 °C, argon gas is introduced into a reaction tube at the

rate of 20-50 cc/min, and the oxygen gas is present at a concentration of 2-20 vol% relative to the argon gas volume.

Claim 9 (Previously presented): The method for fabricating ZnO nanostructures according to claim 8, wherein said nanosheets are 10-100 μm in width, 500-2000 μm in length and 50-150 nm in diameter.

Claim 10 (Previously presented): The method for fabricating ZnO nanostructures according to claim 1, wherein nanorods are fabricated in the condition where a reaction temperature is 900 - 950 $^{\circ}\text{C}$, argon gas is introduced into a reaction tube at the rate of 20-50 cc/min, and the oxygen gas is present at a concentration of 1-8 vol% relative to the argon gas volume.

Claim 11 (Previously presented): The method for fabricating ZnO nanostructures according to claim 1, wherein nanoplates are fabricated in the condition where a reaction temperature is 900 - 950 $^{\circ}\text{C}$, argon gas is introduced into a reaction tube at the rate of 20-50 cc/min, and the oxygen gas is present at a concentration of 8-20 vol% relative to the argon gas volume.

Claim 12 (Withdrawn): An apparatus for fabricating ZnO nanostructures comprising:

a heating element which maintains the internal temperature of a reaction tube at 800 - 950 °C for heating a substrate and source materials within the reaction tube;

a reaction tube for distribution of source material and a substrate which horizontally passes through the interior of the heating element while being positioned inside the heating element, wherein a gas inlet and a gas outlet for the introduction and release of a carrier gas, respectively, are located at each end of the reaction tube; and

a reactant which, being positioned inside the reaction tube, receives the source materials and the substrate.

Claim 13 (Withdrawn): An apparatus for fabricating ZnO nanostructures according to claim 12, wherein said reactant, while its upper portion is laid open, comprises a boat of a rectangular shape where a certain amount of source materials and a substrate are to be contained; source materials and a substrate which are to be contained in said boat; and a plurality of substrates which are spanned at regular intervals over said boat in the direction of the width of said boat.

Claim 14 (Withdrawn): The apparatus for fabricating ZnO nanostructures according to claim 12, wherein said substrates are separated from the source materials to the extent of 3-10 mm in a vertical direction.

Claim 15 (Withdrawn): The apparatus for fabricating ZnO nanostructures according to claim 12 or claim 14, wherein said substrates are coated with gold on top of said silicon substrates to be 10-30 angstrom (Å) thick.

Claim 16 (Withdrawn): The apparatus for fabricating ZnO nanostructures according to claim 12, wherein said substrates and said source materials are placed about 0-50 mm apart from the center of said reaction tube toward the outlet of the carrier gas.